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Evaluation of Emission Factors for Formaldehyde from Certain Wood Processing Operations. Final Report, May-August 1989

Radian Corp., Research Triangle Park, NC

Prepared for:

Environmental Protection Agency, Research Triangle Park, NC

Jun 90

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16. ABSTRACT The report gives results of a search for information on formaldehyde emissions from wood veneer operations, to develop emission factors for the industry. Formaldehyde releases of 246 kg were reported under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 from a large plywood plant in Mississippi. However, existing data found during the study period were insufficient to allow reliable emission factors to be calculated.

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Formaldehyde	Stationary Sources	07C
Plywood	Emission Factors	11D, 11L
Emission		14G

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June 1990

EVALUATION OF EMISSION FACTORS FOR FORMALDEHYDE FROM CERTAIN WOOD PROCESSING OPERATIONS

by

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EPA Contract No. 68-02-4286
Work Assignment 1/083

Project Officer:

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Prepared for:

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Research Triangle Park, NC 27711

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ABSTRACT

A search for information on formaldehyde emissions from wood veneer operations was performed to develop emission factors for the industry. Formaldehyde releases of 246 kg (542 lb) were reported under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 from a large plywood plant in Mississippi. However, existing data found during the study period were insufficient to allow reliable emission factors to be calculated.

CONTROL TECHNOLOGY CENTER

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PREFACE

This report on formaldehyde emissions factors from wood veneer operation was funded by the Control Technology Center (CTC).

The CTC was established by the EPA's Office of Research and Development (ORD) and Office of Air Quality Planning and Standards (OAQPS) to provide technical assistance to State and local air pollution control agencies. Three levels of assistance can be accessed through the CTC. First a CTC Hotline has been established to provide telephone assistance on matters relating to air pollution control technology. Second, more in-depth engineering assistance can be provided when appropriate. Third, the CTC can provide technical guidance through publication of technical guidance documents, development of personal computer software, and presentation of workshops on control technology matters.

The technical guidance projects, such as this one, focus on topics of national or regional interest that are identified through contacts with State and local agencies. In this case, the State of Virginia. The CTC had previously published a report on "Evaluation of Emission Factors for Formaldehyde from Certain Wood Processing Operations," EPA-450/3-87-023 (NTIS PB88-118492), October 1987. This document discusses additional data that became available between October 1987 and May 1989 for wood veneer operations.

1.0 SUMMARY

A search for information on formaldehyde emissions from wood veneer operations was performed to develop emission factors for the industry. Formaldehyde releases of 246 kg (542 lbs) were reported under Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) from a large plywood plant in Mississippi. However, existing data found during the study period were insufficient to allow reliable emission factors to be calculated.

Mandatory submittals of formaldehyde release estimates under SARA Title III and the California Air Toxic Hot Spot Act of 1987 should become available within the next few years. These data could potentially be combined with available production statistics for the wood veneer industry to compile emissions factors. More reliable data may become available from compliance tests that follow permit decisions in States that regulate formaldehyde emissions from wood veneer plants now and in the future. A comprehensive test program performed in several plants and unit operations would provide the highest quality, most useful data for emission factor development.

This report is organized as follows. Section 2.0 presents the Introduction, and Section 3.0 contains Findings. Section 4.0 discusses Data Sources, including a detailed discussion of information gathering methodology and study results, Section 5.0 presents Conclusions, and Section 6.0 contains References.

2.0 INTRODUCTION

The purpose of this study was to supplement the information presented in "Evaluation of Emission Factors for Formaldehyde from Certain Wood Processing Operations," EPA-450/3-87-023 (NTIS PB88-118492), October 1987, with any additional formaldehyde emission information that became available between October 1987 and May 1989. The focus of this effort was existing data that would allow calculation of emission factors for the following four unit operations in wood veneer plants:

1. The formulation of the urea- and phenol-formaldehyde resin glues;
2. The application of the glues;
3. The curing operation; and
4. Storage of finished products.

The methodology used for collecting emission data included: 1) telephone surveys of regulatory personnel, industry contacts, and trade organization contacts; 2) a computerized literature search; and 3) a search of databases containing air toxics emissions data, including the National Air Toxics Information Clearing House (NATICH), recent supplements to the Best Available Control Technology/Lowest Achievable Emission Rate (BACT/LAER) Clearinghouse document, and estimates of 1987 releases of formaldehyde from plants provided to the Environmental Protection Agency (EPA) under the Title III of SARA.

3.0 FINDINGS

Sources of non-confidential formaldehyde emission data found during this study are listed below:

1. Estimated formaldehyde emissions, separated into total fugitive and total point sources for a calendar year, are or will become available from large veneer operations that comply with the reporting requirements of Section 313 of SARA Title III. Under this law, a large plywood plant in Mississippi reported fugitive formaldehyde releases of 24 kg (54 lbs) and point source formaldehyde releases of 222 kg (488 lbs) during 1987. Reported estimates alone will not be sufficient for developing emission factors for wood veneer processes. Production rate data, urea-formaldehyde resin composition data, and emissions from individual processing steps within a facility are not provided in Section 313 reports.

2. Worker exposures to formaldehyde in wood veneer plants are documented in several National Institute of Occupational Safety and Health (NIOSH) reports. Emission factors could not be developed from these data. However, in one in-depth survey at a wood veneer plant in North Carolina, air exchange rates were reported in the press room, and formaldehyde concentrations at operator work stations were also measured. However, actual press room formaldehyde emissions, production rate, and urea-formaldehyde glue compositions were not reported.

3. Several States are developing or implementing regulations governing formaldehyde emissions or concentrations at plant fencelines. Thus, emissions data may become available from future compliance tests at wood veneer facilities. One permit recently issued by the State of Virginia to a veneer trimming and gluing operation limits formaldehyde emissions from this process to 0.627 kg/hour (1.38 lbs/hour) and 5.48 Mg/year (6.04 tons/year) at a production rate of 277.5 m^2 of veneer/hour (2,987 ft^2 of veneer/hour). Additionally, California will be developing a toxics release inventory, including formaldehyde, based on data reported by California plants. Data will be submitted by the plants starting in August 1990.

Formaldehyde emissions information from wood veneer operations found during the study period is insufficient to relate emission rate, production rate, and free formaldehyde content of urea-formaldehyde resin used. Reliable factors could be developed from emission data collected during a test program designed to measure actual emissions, production rate, and percent free formaldehyde in the glue from several wood veneer unit operations at several plants. The number of plants and sources tested would determine the quality of the emission factors generated.

4.0 DATA SOURCES

Telephone contacts, literature searches, and data base reviews provided three primary sources of formaldehyde emission information from wood veneer operations: 1) SARA Title III data submitted for calendar year 1987; 2) industrial hygiene data from Health Hazard Evaluations, Control Technology Reports, and an in-depth survey by NIOSH; and 3) information that will become available from the States in the future. This includes a State toxics database in California, and future permits that could contain data from formaldehyde compliance tests. These sources and available information are discussed in the following sections.

4.1 INFORMATION GATHERING METHODOLOGY

Table 4-1 presents a summary of the information sources reviewed, including key words used in the computerized searches. Formaldehyde emissions information was sought during telephone conversations with individuals in both industry and government. Key persons having knowledge of environmental programs in the wood veneer industry, within EPA, NIOSH, and the California State government were contacted.

Library searches were performed using combinations of key words describing formaldehyde emissions from wood processing plants. Once a list of titles and abstracts was obtained, the articles or reports most likely to contain wood veneer plant emission information were reviewed. Searches were also performed within the BACT/LAER Clearinghouse document and the NATICH.

SARA Title III toxic release information submitted by plants in eight states for 1987 was also reviewed. First, all submitting plants reporting formaldehyde releases within a State were identified. Next, for those plants,

TABLE 4-1. SUMMARY OF INFORMATION SOURCES

Type	Sources
Telephone Contacts	EPA, Office of Toxic Subtances, Formaldehyde Task Group
	California Regulatory Agencies
	NIOSH
	Industry (Georgia Pacific, Weyerhauser, etc.)
Databases	NATICH (EPA)
	BACT/LAER Clearinghouse (EPA)
	SARA Title III submittals in eight States (EPA)
Literature Search	Keywords
	Formaldehyde Emissions Furniture Wood Veneer Plywood

the Standard Industrial Codes (SIC) were compared to the SIC codes that apply to wood veneer operations. Wood veneer plants reporting releases of formaldehyde were further investigated.

4.2 RESULTS

This section presents the results of the data search. Formaldehyde release data was obtained for one plywood plant in Mississippi, and a permit determination was found limiting formaldehyde releases from a wood veneer operation in Virginia. Findings are discussed in detail below.

4.2.1 SARA Title III Data

The Superfund Amendments and Reauthorization Act of 1986 requires industrial facilities using formaldehyde and other toxic chemicals above certain usage thresholds to report to the EPA and the State the amount released to air, water, land, and off-site facilities during a calendar year. Reports must be submitted by July 1 of the year following the reporting year. This summary information is made available to the public through State offices and a Federal database. The first report was due on July 1, 1988, containing calendar year 1987 releases.

Several industry contacts confirmed that large veneer operations would use urea-formaldehyde glues in quantities sufficient to warrant reporting under SARA Title III.[1,2] For toxic chemicals manufactured or processed, including reactants, the reporting threshold was 75,000 lbs in 1987. This threshold dropped to 50,000 lbs in 1988, and 25,000 lbs in 1989. For toxic chemicals (Otherwise Used), the threshold is 10,000 lbs for all years.[3] Submittals from plants in eight States were reviewed (Alabama, Georgia, Louisiana, Mississippi, New York, Ohio, Virginia, and Tennessee).

One submittal was found from a softwood veneer and plywood manufacturing plant in Mississippi with 336 employees.[4] Reported fugitive releases of formaldehyde from this plant during 1987 were 24 kg (54 lbs); point source releases totalled 222 kg (488 lbs). Production rate information and percent free formaldehyde in the resin used were not available. Thus, no emission factor could be calculated from these data.

Release data submitted by plants under SARA Title III are often estimates based on emission factors and engineering judgement, not monitoring data. Therefore, the quality of this type of data is often questionable as to accuracy.

4.2.2 Industrial Hygiene Data

The National Institute of Occupational Safety and Health (NIOSH) performed an in-depth survey of occupational exposures to formaldehyde at the Hillcrest veneer plant in High Point, North Carolina.[5] Data collected during the survey were limited to formaldehyde concentrations in specific areas of worker exposure. Air exchange rates through the plant veneer press room were also measured. No formaldehyde emission rates were measured or could be calculated from data in the report, and production rate and glue compositions were not reported. No other NIOSH reports were reviewed for this study.

4.2.3 State Agency Data

Several States are in the process of developing or implementing regulations governing formaldehyde concentrations at plant fencelines. These States include Connecticut, Idaho, Iowa, Maine, Nevada, New York, North Carolina, Oregon, Pennsylvania, South Dakota, Vermont, Virginia, Washington, and Wisconsin.[6,7] Additionally, California recently promulgated regulations requiring facilities that emit >25 TPY of criteria pollutants and at least one toxic compound to report emissions of toxic compounds, including formaldehyde. A flow diagram showing emissions points had to submitted by August 1989. The first toxic emissions data must be submitted by August 1990.[8,9]

A search of information in the BACT/LAER Clearinghouse document revealed one permit issued on December 12, 1986 in Virginia limiting formaldehyde emissions from veneer sizing and gluing operations.[10] At a throughput capacity of 277.5 m^2 of veneer/hour (2,987 ft^2 of veneer/hour), maximum formaldehyde emissions were limited to 0.627 kg/hour (1.38 lb/hr) and 5.48 Mg/yr (6.04 tons/yr). In addition, the exhaust stack in this operation was limited to a minimum height of 11.4 m (37.5 ft).

Since formaldehyde is a regulated pollutant in Virginia and other states, future compliance testing may provide data that could be used in computing emission factors based on the type of operation, production rate, and glue composition.

A search of the NATICH database revealed no information on formaldehyde emissions from wood veneer plants.

5.0 CONCLUSIONS

This section presents suggestions for future investigations based on information found in this study. More formaldehyde emission data from veneer plants should become available within the next two to three years from mandatory submittals under SARA Title III, the California Air Toxic Hot Spot Act, future permit determinations, and possibly compliance tests. Four potential sources of formaldehyde emissions data are explored below:

1. As SARA Title III reporting thresholds drop and formaldehyde release information becomes available (mainly from high volume veneer operations such as plywood plants), a database of this type of information could be developed. This database could be supplemented by information submitted by California plants under the requirements of the Air Toxic Hot Spot Act of 1987. Additionally, future data of this type could be related to production information potentially available in facility permit applications on file in State agency and EPA Regional Offices, or production statistics compiled by the veneer industry as a whole each year.

2. As State permit determinations limiting formaldehyde emissions become more widespread, a database of these maximum permitted rates and of any future compliance test results could be compiled.

3. Unpublished data from NIOSH surveys of veneer operations may include additional information, such as production rate or glue composition, that could be used to develop an emission factor.

4. Reliable emission factors could be developed from a comprehensive test program designed to measure actual emissions, production rate, and percent free formaldehyde in the glue from several wood veneer unit operations at several plants.

6.0 REFERENCES

1. Telecon. Maggie Dean, Georgia Pacific Co., with T.S. White, Radian Corporation. June 9, 1989.

2. Telecon. Dan Sjolsath, Weyerhauser Corporation, with T.S. White, Radian Corporation. June 16, 1989.

3. 40 CFR Part 372. Toxic Chemical Release Reporting; Community Right-to-Know.

4. Vallado, L. 1985 Mississippi Manufacturers Directory. Mississippi Research and Development Center, Jackson, Mississippi, 1985.

5. Mortimer, V. D., Jr., In-Depth Survey Report: Control Technology for Formaldehyde Emissions at Hillcrest Veneer Plant, High Point, NC. National Institute for Occupational Safety and Health, Cincinnati, OH. January 6, 1984.

6. Telecon. William Groah, Hardwood - Plywood Manufacturing Association, with T.S. White, Radian Corporation. May 26, 1989.

7. Personal Communication. John Stelling, Radian Corporation, with T.S. White, Radian Corporation. July 14, 1989.

8. Telecon. Tim Smith, Bay Area Air Quality Region, with T.S. White, Radian Corporation. May 24, 1989.

9. Telecon. Jeanette Brooks, Sacramento Air Resources Board, with T.S. White, Radian Corporation. June 1, 1989.

10. BACT/LAER Clearinghouse - A Compilation of Control Technology Determinations. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, July 1988.

APPENDIX A

TELEPHONE CONFERENCE RECORDS

TELECON CONTENTS

Date	Calling	Called	Subject	Page
5/24/89	T. White (Radian)	G. Semeniuk (EPA/CTS)*	Formaldehyde/Wood furniture/Veneering	A-1
5/24/89	T. White (Radian)	G. Schweer (EPA/CTS)	Formaldehyde/Wood veneering	A-2
5/24/89	T. Smith (BAAQR)	T. White (Radian)	Formaldehyde/Mattress fumigation	A-3
5/26/89	T. White (Radian)	W. Groah (HPMA)	Formaldehyde/Wood veneering	A-4
5/26/89	J. Wiltse (EPA/FTG)	T. White (Radian)	Formaldehyde/Wood veneering	A-5
5/31/89	M. Crandall (NICSH)	T. White (Radian)	Formaldehyde/Wood processing/Hygiene	A-6
6/1/89	T. White (Radian)	J. Brooks (CARB)	Formaldehyde emissions	A-7
6/1/89	T. White (Radian)	J. Denton (CARB)	Formaldehyde/Wood veneering	A-8
6/2/89	L. Murchison (CARB)	T. White (Radian)	Formaldehyde/Wood processing	A-9
6/2/89	E. Spirer (NICSH)	T. White (Radian)	Formaldehyde/Literature sources	A-10
6/2/89	V. Aguciovay (CARB)	T. White (Radian)	Formaldehyde/Emissions articles	A-11
6/9/89	T. White (Radian)	M. Dean (GA Pacific)	Formaldehyde/Emissions information	A-12
6/13/89	T. White (Radian)	D. Lewis (Weyerhauser)	Formaldehyde/Emissions information	A-13
6/16/89	D. Sjolsath (Weyerhauser)	T. White (Radian)	Formaldehyde/Emissions information	A-14

(*) CTS--Office of Toxic Substances; BAAQR--Bay Area Air Quality Region; HPMA--Hardwood-Plywood Manufacturing Assoc.; FTG--Formaldehyde Task Group; NICSH--National Institute for Occupational Safety and Health; CARB--California Air Resources Board.

TELECON

CALLING: Ted White ORGANIZATION: Radian Corporation

CONTACTED: George Semeniuk ORGANIZATION: U.S. EPA/Office of Toxic Substances (OTS)
401 M Street, N.W. TS 794
Washington, DC 20460
(202) 382-2134

DATE: May 24, 1989 TIME: 2:50 p.m.

SUBJECT: Emissions of Formaldehyde from Wood Furniture/Veneering

TOPICS DISCUSSED

1. There is some information from furniture people. Formaldehyde levels were measured in a showroom in High Point, North Carolina.

2. You might check with OSHA (there was a new standard promulgated in December 1987):

   Imogene Rogers
   (202) 523-7157

3. George Semeniuk has been looking at the impact of wood products on indoor air only.

   He has looked at approximately 21 different types of controls and benefits (risk/benefit analysis). This study was completed at the end of 1988, now results are under review.

4. Another source of data is California (Proposition 65). Trade associates are also putting together documents for estimating formaldehyde emissions. Go through the Air Resources Board, Peggy Jenkins, (916) 323-5043.

5. George has not looked at urea-formaldehyde glue testing techniques.

6. In summary, the focus of the OTS work to date has been indoor air emissions of formaldehyde based on board tests. Thus, OTS does not have any actual processing information, or urea-formaldehyde resin formulations information.

FOLLOW-UP

Contacted California (see Contact Reports, p. A-7 through A-9, and pp. A-11).

TELECON

CALLING: Ted White ORGANIZATION: Radian Corporation

CONTACTED: Greg Schweer ORGANIZATION: U.S. EPA/OTS
401 M Street, S.W.
Washington, DC 20460
(202) 382-3917

DATE: May 24, 1989 TIME: 4:30 p.m.

SUBJECT: Emissions of Formaldehyde from Wood Veneering Operations

TOPICS DISCUSSED

1. Greg Schweer is not privy to this type of information.

2. NIOSH may be a good source of information for formaldehyde concentrations.

   Start with: Mike Crandall (513) 841-4374

   Another contact: Richard Hartell (513) 841-4374

FOLLOW-UP

Contacted Mike Crandall with NIOSH (see Contact Report, pp. A-6.)

TELECON

CALLING: Tim Smith

ORGANIZATION: Bay Area Air Quality Region,
San Francisco, California
939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

CONTACTED: Ted White

ORGANIZATION: Radian Corporation

DATE: May 24, 1989

TIME: 4:40 p.m.

SUBJECT: Request Data for Mattress Fumigation with Formaldehyde

TOPICS DISCUSSED

1. AB 2588 passed in 1987 or 1988: "Air Toxics Hot Spot Act of 1987".
2. This is a toxics inventory effort. Inventory should be completed by August 1989 for many industries (a toxics plan).
3. Information gathered under this rule will be in the public domain:

   Contact: Jeanette Brooks
   California Air
   Resources Board
   Stationary Source Division
   P. O. Box 2815
   Sacramento, CA 95812
   (916) 322-9148

FOLLOW-UP

Contacted Jeanette Brooks (see Contact Report, pp. A-7).

TELECON

CALLING: Ted White ORGANIZATION: Radian Corporation

CONTACTED: William Groah ORGANIZATION: Hardwood-Plywood Manufacturing Association
1825 Michael Faraday Drive
Reston, VA 22090
(703) 435-2900

DATE: May 26, 1989 TIME: 11:07 a.m.

SUBJECT: Emissions of Formaldehyde from Wood Veneering Operations

TOPICS DISCUSSED

1. There are no non-confidential or confidential formaldehyde studies from non-particleboard plants that Bill knows of.

2. Bill thinks that there is probably proprietary data available, from (most probably):

    a. Weyerhauser: Dave Lewis
    Tacoma, WA
    (206) 924-3690

    b. Georgia Pacific in Washington, DC: Maggie Dean or Kip Howlett
    (202) 659-3600

    c. Possibly Louisiana Pacific (they have recently built plants in States that have formaldehyde emissions limits; there may be some permit application-type information).

    d. Bill said that these other States have either proposed or actually regulate formaldehyde at plant fencelines: Connecticut, New York, Maine, North Carolina, Iowa, Pennsylvania, South Dakota, Nevada, and Vermont. The level proposed in Vermont is approximately 1000 times more stringent than the level currently regulated by Virginia at the fenceline.

FOLLOW-UP

Contacted Maggie Dean of Georgia Pacific and Dave Lewis of Weyerhauser (see Contact Reports, pages A-12 and A-13, respectively).

TELECON

CALLING: Janette Wiltse ORGANIZATION: Chair, Formaldehyde Task Group,
U.S. EPA
401 M Street, N.W.
Washington, DC 20460
(202) 382-7400

CONTACTED: Ted White ORGANIZATION: Radian Corporation

DATE: May 26, 1989 TIME: 3:15 p.m.

SUBJECT: Formaldehyde Emissions from Veneering - Data Sources

TOPICS DISCUSSED

1. Janette Wiltse had no information or sources of information for emission rates of formaldehyde from wood processing plants.

2. She suggested searching the SARA Title III databases for formaldehyde emissions reported yearly, since she thought the reporting threshold would be 10,000 lbs for glues.

FOLLOW-UP

Reviewed SARA Title III submittals for calendar year 1987 in eight States.

TELECON

CALLING: Mike Crandall

ORGANIZATION: NIOSH, R-11
4676 Columbia Parkway
Cincinnati, OH 45226
(513) 841-4374

CONTACTED: Ted White

ORGANIZATION: Radian Corporation

DATE: May 31, 1989

TIME: 3:32 p.m.

SUBJECT: Formaldehyde - Wood Processing Operations-Industrial Hygiene Data

TOPICS DISCUSSED

1. Mike has lots of reports on worker exposure information in wood processing plants in the file.

2. He has been in some plywood manufacturing plants measuring emissions.

3. All reports are in National Technical Information Service (NTIS): There are probably hundreds of Health Hazard Evaluations (HHE). Whether or not they contain ventilation data is questionable.

4. Mike will check to see if he can do a search of applicable reports. If he cannot, he will call back. If he can, he will send a "searched" list to me.

FOLLOW-UP

Ed Spirer of NIOSH called back with a list of reports (see Contact Report, pp. A-10).

TELECON

CALLING: Ted White ORGANIZATION: Radian Corporation

CONTACTED: Jeanette Brooks ORGANIZATION: California Air Resources Board
Stationary Source Division
P. O. Box 2815
Sacramento, CA 95812
(916) 322-9148

DATE: June 1, 1989 TIME: 12:45 p.m.

SUBJECT: Request Formaldehyde Emissions Information

TOPICS DISCUSSED

1. There has been some emissions work for regulatory work estimated or measured. Call:

   a. Dr. Joan Denton (916) 322-8278

   b. Beth Schwehr (916) 322-3807 (Lisa Murchison is Beth's boss.)

2. A plan will be required for facilities with criteria pollutant emissions greater than 25 TPY. Reporting requirements include:

   a. Flow diagram for emission points (by August 1989)

   b. First emission information (by August 1989) (plants are required to submit this information to the State if they emit 10 to 25 TPY criteria pollutants)

      -There is no lower cutoff of toxic emissions required to be reported;

      -There is a degree of accuracy required, and there are some exemptions.

FOLLOW-UP

Contacted Joan Denton and Lisa Murchison (see Contact Reports on pages A-8 and A-9, respectively).

TELECON

CALLING: Ted White ORGANIZATION: Radian Corporation

CONTACTED: Joan Denton ORGANIZATION: Department Head,
California Air Resources Board
Stationary Source Division
P. O. Box 2815
Sacramento, CA 95812
(916) 322-9148

DATE: June 1, 1989 TIME: 12:55 p.m.

SUBJECT: Information on Formaldehyde Emissions from Wood Veneer Plants

TOPICS DISCUSSED

1. Joan thought that Beth Schwehr was a good person to talk to about formaldehyde emission inventories.

FOLLOW-UP

Called for Beth Schwehr, and was referred to Lisa Murchison (see Contact Report, pp. A-9).

TELECON

CALLING: Lisa Murchison

ORGANIZATION: California Air Resources Board
Stationary Source Division
P. O. Box 2815
Sacramento, CA 95812
(916) 322-3807

CONTACTED: Ted White

ORGANIZATION: Radian Corporation

DATE: June 2, 1989

TIME: 10:58 a.m.

SUBJECT: Formaldehyde Emissions from Wood Processing Plants

TOPICS DISCUSSED

1. Lisa's office has been working on emission estimating techniques. However, she does not know about wood processing plants.
2. Vincent Aguciovay [(916) 322-7078] is working on formaldehyde.
3. Vincent will call back with any articles or information.

FOLLOW-UP

See telecon on page A-11.

TELECON

CALLING: Ed Spirer ORGANIZATION: NIOSH, R-9
4676 Columbia Parkway
Cincinnati, OH 45226
(513) 841-4374

CONTACTED: Ted White ORGANIZATION: Radian Corporation

DATE: June 2, 1989 TIME: 2:30 p.m.

SUBJECT: Names of Literature Sources (at the request of Mike Crandall)

TOPICS DISCUSSED

1. 1982: Hillcrest Veneer Plant
   CT\4 108.13B (this is an in-depth survey report)

2. Dixie Furniture Plant
   Lexington, North Carolina
   CT\108.27B

3. Burlington Industries
   1W\033.1B

   House Finishing Plant

4. Note: These are all NIOSH reports in the NIOSHTIC database
   (513) 533-8328.

FOLLOW-UP

Obtained and reviewed these NIOSH reports for formaldehyde emission information.

TELECON

CALLING: Vincent Aguciovay ORGANIZATION: California Air Resources Board
Stationary Source Division
P. O. Box 2815
Sacramento, CA 95812
(916) 322-3807

CONTACTED: Ted White ORGANIZATION: Radian Corporation

DATE: June 2, 1989 TIME: 2:35 p.m.

SUBJECT: Formaldehyde Emissions Articles

TOPICS DISCUSSED

1. Vincent had some references for estimating formaldehyde emissions:

   a. 1984
   Advances in Chemistry Series
   Formaldehyde: Analytical Chemistry and Toxicology

   Victor Puroski,
   James River Corporation
   Developed from a symposium sponsored by the Division of Environmental Chemistry of the 187th meeting of the ACS, St. Louis, Missouri. April 8-13, 1984. Publisher: ACS, Washington, D.C. 1985. p.252

   b. EPA 450/2-88-006 (NTIS PB89-135644)
   Toxic Air Pollutant Emission Factors
   A compilation for selected toxic compounds from sources.

FOLLOW-UP

Obtained and reviewed these reports for formaldehyde emissions information.

TELECON

CALLING: Ted White ORGANIZATION: Radian Corporation

CONTACTED: Maggie Dean ORGANIZATION: Georgia Pacific Co.
1875 I Street, N.W. Suite 775
Washington, DC 20006
(202) 659-3600

DATE: June 9, 1989 TIME: 4:51 p.m.

SUBJECT: Information on Formaldehyde Emissions

TOPICS DISCUSSED

1. Existing non-confidential data are available from some of the Georgia Pacific plants in the form of SARA Title III responses.

2. Georgia Pacific has reported formaldehyde emissions from gluing operations.

3. EPA's Office of Toxic Substances has issued a guidance document for SARA assistance.

4. NCASI has also issued SARA Title III Guidance: the person to talk to at NCASI is Gaxy Bond. However, this guidance is only for pulp and paper manufacturing.

FOLLOW-UP

Reviewed SARA Title III submittals for calendar year 1987 in eight States.

TELECON

CALLING: Ted White ORGANIZATION: Radian Corporation

CONTACTED: Dave Lewis ORGANIZATION: Weyerhauser Corporation
Weyerhauser Building
Tacoma, WA 98477
(206) 924-3690

DATE: June 13, 1989 TIME: 2:30 p.m.

SUBJECT: Information on Formaldehyde Releases

TOPICS DISCUSSED

1. Dave thought Weyerhauser had done some preliminary work in this area and gave me two contacts:

    a. Dan Sjolsath
    (206) 924-6153
    Head, Environmental Technology Group

    b. Gordon DeBruine (206) 924-2132
    Issue Manager, Formaldehyde

FOLLOW-UP

Contacted Dan Sjolsath (see Contact Report, pp. A-14).

TELECON

CALLING: Dan Sjolsath ORGANIZATION: Weyerhauser Corporation
Weyerhauser Building
Tacoma, WA 98477
(206) 924-6153

CONTACTED: Ted White ORGANIZATION: Radian Corporation

DATE: June 16, 1989 TIME: 11:30 a.m.

SUBJECT: Information on Formaldehyde Releases

TOPICS DISCUSSED

1. Dan has done some research into emissions of formaldehyde from particle board and oriented strand board plants, but none on molding operations or plywood plants.

2. Many large veneering operations would bring in tank truck loads of glue components, and mix up their own urea-formaldehyde resins; thus, the plants would probably process enough formaldehyde to report under SARA Title III requirements.

3. Jerry White of Weyerhauser would be the "point man" for SARA III work done in the company. He is in Tacoma, WA at (206) 924-6415.

FOLLOW-UP

Reviewed SARA Title III submittals for calendar year 1987 in eight States.